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# INTRODUCTION

The Institute for Computer Applications in Science and Engineering (ICASE) is operated at the Langley Research Center of NASA by the Universities Space Research Association (USRA) under a contract with the Center. USRA is a non-profit consortium of major U. S. colleges and universities.

The Institute conducts unclassified basic research in applied mathematics, numerical analysis, and computer science in order to extend and improve problem solving capabilities in science and engineering, particularly in aeronautics and space.

ICASE has a small permanent staff. Research is conducted primarily by visiting scientists from universities and industry who have resident appointments for limited periods of time, and by consultants. Members of NASA's research staff also may be resident at ICASE for limited periods.

The major categories of the current ICASE research program are:

- Numerical methods, with particular emphasis on the development and analysis of basic numerical algorithms;
- Control and parameter identification problems, with emphasis on effective numerical methods;
- Computational problems in engineering and the physical sciences, particularly fluid dynamics, acoustics, structural analysis, and chemistry;
- Computer systems and software, especially vector and parallel computers, microcomputers, and data management.

ICASE reports are considered to be primarily preprints of manuscripts that have been submitted to appropriate research journals or which are to appear in conference proceedings. In the next section, a complete listing of ICASE reports for the calendar years 1975 through December 1988 are given. The final section contains journal and conference proceedings references for older reports.

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Nicol, David M.: *Parallel algorithms for mapping pipelined and parallel computations*. ICASE Report No. 88-2, April 1, 1988, 34 pages. Submitted to IEEE Trans. Comput.

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Naik, Vijay K. and Merrell L. Patrick: *Data traffic reduction schemes for sparse Cholesky factorizations*. ICASE Report No. 88-14, February 10, 1988, 34 pages. Submitted to Int. Supercomputing Conf.

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